REMARKS

Claims 8, 15, 17, 24, 32 and 39 have been amended and claims 59-64 have been added. Claims 1-64 are pending in the application. Reconsideration of the application is requested in view of the amendments and the remarks to follow.

The amendments to the specification and drawing address minor informalities noted during review. No new matter is added by the amendments to the specification or the amendments to the drawing.

The amendment to the Abstract brings the Abstract into conformance with present requirements of the USPTO. The requirements relative to Abstracts have been changed since filing of the application.

The amendments to claims 15 and 39 address minor informalities noted during review and/or concerns noted in the Office Action. The amendments to claims 8, 17, 24 and 32 place these claims in independent form, including the recitation of the base claim and any intervening claims. However, these amendments are not intended to alter the scope of the claims. No new matter is added by these amendments.

New Claims:

New claims 59-64 are supported at least by text appearing at p. 7, line 2 through p. 31, line 18 of the application as originally filed. No new matter is added by new claims 59-64. New claims 59-64 are similar to claim 33 et seq. but differ in scope. New claims 59-64 distinguish over the art of record and are allowable.

Rejection under 35 U.S.C. §112, 1st ¶:

Claims 1-58 stand rejected under 35 U.S.C. §112, 2nd ¶, as allegedly failing to comply with the written description requirement. Applicant traverses and requests reconsideration.

The Office Action states (p. 2) that "The terminology "scale independent model" on lines 15-16 of page 7 does not appear to be relevant to modeling the type of computer data described in the first paragraph of page 7, as "scale independent" refers to geometric entities. A data base search performed by the examiner did not result in any instances of scale independence that were related to computer applications that did not have some geometric or scaling factor."

Applicant notes that the specification cannot be rejected on such statutory basis. Applicant further notes that not one of Applicants' claims reflects the quoted language and thus that not even one of Applicants' claims can possibly be rejected under 35 U.S.C. 112, 1ST ¶, on the basis presented in the Office Action. In fact, of Applicants' independent claims, only claims 1, 8 (as amended) and 45 include even the term "scale".

Applicant further notes that of necessity, description of innovations in the relevant arts must differ from descriptions of prior art endeavors. As such, descriptions of innovations must depart from the familiar, the "tried and true" quotidian examples of prior art. As a result, the USPTO's mission should and does include recognition of such need for descriptions that depart from the descriptions of the prior art.

The narrow interpretation adopted in the Office Action is puzzling to Applicant, at least in part because adoption of an inapposite denotation or

connotation for terminology logically defeats intelligent interpretation and thus comprehension. Applicant notes that the term "scale", as described in Webster's Seventh New Collegiate Dictionary (G.C. Merriam Co., publishers, Springfield, Massachusetts, copyrights ranging from 1916 through 1971) at p. 767, includes a broad variety of context-inferable meanings for the term "scale", including meanings ranging from "a pan or tray of a balance" through "a small, flattened, rigid, and definitely circumscribed plate forming part of the external body covering exp. of a fish", "a means of ascent", "to attack with or take by means of scaling ladders (~ a castle wall)", "a modified leaf bud protecting a seed plant bud before expansion", "infestation with or disease caused by scale insects", "a graduated series or scheme of rank or order" and "a graded series of tests of performance used in rating individual intelligence ...."

Within this spectrum, the present disclosure contemplates a graduated or graded series or scheme of computation resources, where the series of resources may be **scaled** to **add** computation resources commensurate with demands placed thereon.

More particularly, the specification as filed provides clear notice to the public as to how the term as used in the claims is intended to be interpreted. For example, text appearing at p. 2, lines 12-18, of the specification as originally filed states that:

> While there are often many computers, an Internet service or Website may only run a few programs. For instance, one Website may have 2000-3000 computers that run only 10-20 distinct software components. Computers may be added daily to provide scalability as the Website receives increasingly more visitors, but the underlying programs change less frequently. Rather, there are simply more computers running the same software in parallel to accommodate the increased volume of visitors.

As such, the term "scalability" and analogous claim terminology refers clearly at least to capacity for modification of the scale or size, number of components, data/request capacity and throughput and the like as applied to computation systems.

Accordingly, the specific interpretation offered by the Office Action excludes the majority of definitions of the term "scale" as the term is ordinarily employed. Such interpretation apparently arbitrarily selects an inappropriate definition without providing any logical reason for choosing one definition or interpretation over another as well as being clearly at odds with the usage of terminology in the instant application and is inconsistent with how a person of ordinary skill in the relevant arts would employ such terminology.

These principles are explained in more detail in MPEP §2111.01, entitled "Plain Meaning ". This MPEP section states that:

> While the meaning of claims of issued patents are interpreted in light of the specification, prosecution history, prior art and other claims, this is not the mode of claim interpretation to be applied during examination. During examination, the claims must be interpreted as broadly as their terms reasonably allow. This means that the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) (discussed below). One must bear in mind that, especially in nonchemical cases, the words in a claim are generally not limited in their meaning by what is shown or disclosed in the specification. It is only when the specification provides definitions for terms appearing in the claims that the specification can be used in interpreting claim language. *In re Vogel*, 422 F.2d 438, 441, 164 USPQ 619, 622 (CCPA 1970).

Further, the patent statutes at 35 U.S.C. §112 require the Applicant to present claims in the manner which it regards as appropriate (2ND ¶, stating that: "The specification shall conclude with one or more claims particularly pointing

out and distinctly claiming the subject matter which the applicant regards as his invention"). Accordingly, the Examiner must examine the claims in the manner in which the Applicant "regards" the claimed subject matter. How Applicant regards this subject matter is accordance with the literal wording of the claims. None of Applicant's claims include the subject language referred to above.

Applicant is afforded broad latitude in choice of claim language. This principle is so deeply engrained in patent practice that Applicant is permitted to be their own lexicographer, as is noted, for example, in MPEP §2111.01. This MPEP section states, inter alia, in a subsection entitled "APPLICANT MAY BE OWN LEXICOGRAPHER" that:

> Applicant may be his or her own lexicographer as long as the meaning assigned to the term is not repugnant to the term's well known usage. *In re Hill*, 161 F.2d 367, 73 USPQ 482 (CCPA 1947). Any special meaning assigned to a term "must be sufficiently clear in the specification that any departure from common usage would be so understood by a person of experience in the field of the invention." *Multiform Desiccants Inc. v. Medzam Ltd.*, 133 F.3d 1473, 1477, 45 USPQ2d 1429, 1432 (Fed. Cir. 1998).

Accordingly, the claims should be interpreted in conformance with Applicants' disclosure and within the ambit of common usage of the terminology in the relevant arts. As such, Applicant respectfully requests that the rejection of claims 1-58 under 35 U.S.C. §112, 1ST ¶, be withdrawn, and that claims 1-58 be allowed.

Rejection under 35 U.S.C. §112, 2nd ¶:

Claims 1-58 stand rejected under 35 U.S.C. §112, 2ND ¶. The Office Action (p. 3, item 4) states that: "Claims 1-32 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP §2172.01."

This MPEP passage is entitled "Unclaimed Essential Matter" and is reproduced below:

> A claim which omits matter **disclosed to be essential to the invention as described in the specification** or in other statements of record may be rejected under 35 U.S.C. 112, first paragraph, as not enabling. *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). See also MPEP § 2164.08(c)(c) . Such essential matter may include missing elements, steps or necessary structural cooperative relationships of elements described by the applicant(s) as necessary to practice the invention.
>
> In addition, a claim which fails to interrelate essential elements of the invention **as defined by applicant(s) in the specification** may be rejected under 35 U.S.C. 112, second paragraph, for failure to point out and distinctly claim the invention. See *In re Venezia*, 530 F.2d 956, 189 USPQ 149 (CCPA 1976); *In re Collier*, 397 F.2d 1003, 158 USPQ 266 (CCPA 1968).

These cases, and the legal principles promulgated therein, may be distinguished on their facts from the situation presented in the instant application and claims. For example, the discussion in the Office Action relative to claim 1 fails completely to identify where **in applicants' specification** such **definition of necessary interrelationship** between claimed elements is provided.

The Office Action states (p. 3) that "The phrase "scale-independent" is not understood in the context of a "logical model of an application to be implemented by a distributed computer system." A scale model generally refers to a representation of a physical entity that is reduced in size. It does not appear to

relate to a "logical model."" The last two sentences are in fact correct, at least because a computer model has no physical size per se associated with it. A toy model of a racing car, on the other hand, could be a physical scale model. However, toy cars do not provide computer models and cannot substitute for such.

Guidance in interpretation of claim language is often found in the Detailed Description. In this instance, the Summary forms a precis providing some such guidance, and is found at page 3, line 16 through page 6, line 3; further guidance may be obtained by reading the Detailed Description, which begins at page 7, line 1. The Summary is reproduced below:

> A system facilitates the design and implementation of large-scale distributed computer applications, such as Internet Services and Websites. The applications are implemented as software distributed over many interconnected computer nodes, such as server data centers, Internet data centers (IDCs), Web farms, and the like.
>
> The system has a modeling system and a deployment system. The modeling system permits developers to architect the hardware and software used to implement the applications in an abstract manner. The modeling system defines a set of components used to describe the functionality of an application in a logical, scale-independent manner. In the described implementation, the modeling system defines several model components: a module, a port, and a wire. The model also admits an unlimited set of model extensions including, but not limited to stores, event sources, event sinks, and event wires.
>
> The module is the basic functional unit and represents a container of behavior that may be implemented by one or more computers running one or more software programs. For instance, in the context of a Website, one module might represent a front end that renders HTML pages, another module might represent a login database, and another module might represent a mailbox program. A port is a service access point for the module. All communications into and out of the module goes through a port. A wire is the logical binding that defines an allowed communication route between two ports.
>
> While the model consists of the three basic components described above (namely modules, ports, and wires), the model can be augmented with numerous extensions, specializations of the basic components. For example, a store is a basic unit of storage and a specialization of the module. A store represents a logical amount of

storage, which may be implemented by any number of physical disks or other storage media. Like the module, the store represents behavior, in the case the ability to save and retrieve data. Also like the module, the store can communicate with other modules and stores through ports and wires. A store differs from a module in that it is labeled with additional attributes such as the amount of storage required, required access speed, or a minimum number of outstanding storage requests. The store extends the model by adding a specialized type of module with additional semantic information.

The model can be further augmented with ports extensions. For example, an event source and an event sink are used for discrete semantic messaging between modules and module extensions, such as stores. Event sinks are specialized ports in that they are communication access points between model components, but with additional semantics, namely the specific events.

The model can also be augmented with wires extensions. For example, an event wire is a logical connection between event sources and event sinks, and carries event messages used to inform modules and implement policy. While most wire extensions allow communication at run time, it is possible for some wire extensions to transfer data only at compile or initialization time.

The model components are arranged and interconnected to form a scale-independent model of the application. Each component specifies some functionality of the application.

Once a logical model is created, the deployment system uses the logical model to automatically deploy various computer/software resources to implement the application. The deployment system converts each of the model components into one or more instances that correspond to physical resources. As one example, the resources correspond to computer nodes of a distributed computer system that are loaded with specific types of software to implement the function represented by the model components. The deployment system initially installs the application and then dynamically and automatically modifies the resources used to implement the application in an ongoing basis as the operating parameters of the application change.

In one implementation, the deployment system includes a service running state to store the logical model and track instances of the model components as they are created (or destroyed). A resource manager tracks the computer nodes available for allocation and tracks the nodes as they are allocated to correlate the nodes with the instances. The deployment system further includes a loader to load software onto newly allocated computer nodes to implement the logical functions represented by the model components.

The Office Action further states that "Lines 2-3 recite, "forming a scale-independent logical model of an application to be implemented by a distributed computer system." There is nothing specific which explains how a "distributed computer system" implements a model. Specific steps are required to explain how the desired objective is accomplished. There are no steps to explain how elements of the distributed computer system model elements logical elements of an application." The above-noted passage is incomprehensible, particularly the last sentence thereof. Clarification is requested.

The rejection apparently relies on the peculiarly narrow definitions adopted in the Office Action for interpretation of the terminology "scale-independent", viz., relating to "geometric entities" (p. 2) and "scale model" (p. 3). The Office Action further apparently improperly relies on the claims to provide specific explanation of how a "distributed computer system" implements a model, and states that: "Specific steps are required to explain how the desired objective is achieved", but no adequate authority for this opinion is provided. The proffered MPEP citation fails completely to support the position adopted in the Office Action.

Applicant notes that MPEP §2173.04, entitled "Breadth Is Not Indefiniteness", provides guidelines in appropriate interpretation of those requirements. This MPEP section states that:

> Breadth of a claim is not to be equated with indefiniteness. *In re Miller*, 441 F.2d 689, 169 USPQ 597 (CCPA 1971). **If the scope of the subject matter embraced by the claims is clear**, and **if applicants have not otherwise indicated that they intend the invention to be of a scope different from that defined in the claims**, then the claims comply with 35 U.S.C. 112, second paragraph.

> Undue breadth of the claim may be addressed under different statutory provisions, depending on the reasons for concluding that the claim is too broad. If the claim is too broad because it does not set forth that which applicants regard as their invention as evidenced by statements outside of the application as filed, a rejection under 35 U.S.C. 112, second paragraph would be appropriate. If the claim is too broad because it is not supported by the original description or by an enabling disclosure, a rejection under 35 U.S.C. 112, first paragraph would be appropriate. If the claim is too broad because it reads on the prior art, a rejection under either 35 U.S.C. 102 or 103 would be appropriate.

In the instant application, the scope of the subject matter within the ambit of the claims is clear. Further, the Office Action fails to show that Applicant has indicated intent that the scope of the claimed subject matter differs from that of the Detailed Description.

The Office Action states (p. 3), relative to claim 1, that: "Lines 5-6 recites, "converting individual model components into one or more instances representative of physical resources." It is not understood how a component may be converted to an instance or what is meant by an instance? The definition of "instance" provided by the Webster's New Riverside Dictionary published 1n [sic] 1994 is as follows:

Instance n. 1. Something illustrative of a class or group 2. A legal proceeding or process 3. A step in a process."

The Office Action further states (p. 4) that: "The claim must provide a clear explanation of what is meant by instance in the context of this invention. In addition, the use of the term "converted" is not understood. If [sic] for example, a model component is a term in a mathematical equation, how may this be converted to the abstract term "instance? [sic]" Again, the specification is required to provide explanation; the claims are not. It is **black letter law** that the claims are to be interpreted in light of the detailed description contained in the specification.

Additionally, Applicant finds guidance in interpretation of the term "instance" in many places, of which a few are provided below to assist in interpretation of the language of the claims.

As noted above, a first source of guidance in claim interpretation is Applicants' specification. For example, the following passage appears on page 5, lines 12-23 of the specification as originally filed:

> Once a logical model is created, the deployment system uses the logical model to automatically deploy various computer/software resources to implement the application. The deployment system converts each of the model components into one or more instances that correspond to physical resources. As one example, the resources correspond to computer nodes of a distributed computer system that are loaded with specific types of software to implement the function represented by the model components. The deployment system initially installs the application and then dynamically and automatically modifies the resources used to implement the application in an ongoing basis as the operating parameters of the application change.

Another useful source of guidance in interpretation of English-language terminology is a dictionary. For example, Webster's Seventh New Collegiate Dictionary (G.C. Merriam Co., publishers, Springfield, Massachusetts, copyrights ranging from 1916 through 1971) at p. 438 provides the following definitions of the term "instance":

[1]instance ... *n* **1 a** *archaic* **:** urgent or earnest solicitation **b :** INSTIGATION, REQUEST **2 a** *archaic* exception **b :** an illustrative case **c :** *obs* TOKEN, SIGN **d** *obs* **:** DETAIL, CIRCUMSTANCE **3 :** the institution and prosecution of a lawsuit **4 :** an event that is part of a process or series

In the instant application and claims, the term "instance" is clearly used in a sense analogous to "an illustrative case" or "an event that is part of a process or

series" - as an example of computer-readable code that is configured to cause a processor to effectuate the functional claim language associated therewith.

The Office Action then states (p. 4) that "The claim is written like wish list with unclear objectives, with steps that imply some sort of modeling function." Applicant is mystified by this interpretation. Clarification of the rejection is respectfully requested.

Claim 1 recites "forming a scale-independent logical model of an application to be implemented by a distributed computer system, the model having multiple components representing logical functions of the application". A clearly stated objective or result is "converting individual model components into one or more instances representative of physical resources that are used to implement the logical functions". There are clear logical relationships between the claimed acts and the affirmatively-recited elements referenced thereby.

Applicant notes that great latitude is afforded to any applicant in defining the subject matter of the claims. This is discussed in many locations throughout the MPEP, however, MPEP §2173.05(g), entitled "Functional Limitations" provides insight into the scope of such latitude. This MPEP section states that:

> A functional limitation is an attempt to **define something by what it does, rather than by what it is** (e.g., as evidenced by its specific structure or specific ingredients). There is nothing inherently wrong with defining some part of an invention in functional terms. Functional language does not, in and of itself, render a claim improper. *In re Swinehart*, 439 F.2d 210, 169 USPQ 226 (CCPA 1971).
>
> ***A functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used***. A functional limitation is often used in association with an element, ingredient, or step of a process to define a particular capability or purpose that is served by the recited element, ingredient

> or step. Whether or not the functional limitation complies with 35 U.S.C. 112, second paragraph is a different issue from whether the limitation is properly supported under 35 U.S.C. 112, first paragraph or is distinguished over the prior art. A few examples are set forth below to illustrate situations where the issue of whether a functional limitation complies with 35 U.S.C. 112, second paragraph was considered. (emphasis added).

Many examples of subject matter claimed in functional formats are available at a database maintained by the USPTO at uspto.gov. To deny one applicant the benefit afforded by the U.S. Patent Statutes and the U.S. Constitution ("to promote the progress of science and useful arts." U.S. Constitution, Article 1, Section 8) whilst permitting others such benefits is clearly unreasonable, defeats the purposes and intents of such legislation and comprises an abridgement of Applicants' rights.

The Office Action states (p. 3) that "The phrase "scale-independent" is not understood in the context of an application to be implemented by a distributed computer system." There is nothing specific which explains how a "distributed computer system" implements a model. Specific steps are required to explain how the desired objective is to be achieved. There are no steps to explain how elements of the distributed computer system model elements logical elements of an application."

One issue is that the above-noted paragraph is incomprehensible, in part due to failure to conform to English grammar. Clarification is requested.

Another issue is that the claims are not required to "explain" anything. The specification is used for detailed description, and thus is often referred to as such.

Yet another issue is that Applicant is entitled to claims of varying scope. This is discussed, for example, in MPEP §608.01(m), entitled "Form of Claims". This MPEP section states, in part, that:

> Many of the difficulties encountered in the prosecution of patent applications after final rejection may be alleviated if each applicant includes, at the time of filing or no later than the first reply, claims varying from the broadest to which he or she believes he or she is entitled to the most detailed that he or she is willing to accept.
>
> Claims should preferably be arranged in order of scope so that the first claim presented is the least restrictive. All dependent claims should be grouped together with the claim or claims to which they refer to the extent practicable. Where separate species are claimed, the claims of like species should be grouped together where possible. Similarly, product and process claims should be separately grouped. Such arrangements are for the purpose of facilitating classification and examination.

This is explained below in more detail with reference to MPEP §2164.05(a), entitled "Specification Must Be Enabling as of the Filing Date". This MPEP section states that:

> Whether the specification would have been enabling as of the filing date involves consideration of the nature of the invention, the state of the prior art, and the level of skill in the art. The initial inquiry is into the nature of the invention, i.e., the subject matter to which the claimed invention pertains. The nature of the invention becomes the backdrop to determine the state of the art and the level of skill possessed by one skilled in the art.
>
> The state of the prior art is what one skilled in the art would have known, at the time the application was filed, about the subject matter to which the claimed invention pertains. The relative skill of those in the art refers to the skill of those in the art in relation to the subject matter to which the claimed invention pertains at the time the application was filed. See MPEP § 2164.05(b)(b) .
>
> The state of the prior art provides evidence for the degree of predictability in the art and is related to the amount of direction or guidance needed in the specification as filed to meet the enablement requirement. The state of the prior art is also related to the need for working examples in the specification.
>
> The state of the art for a given technology is not static in time. It is entirely possible that a disclosure filed on January 2, 1990, would not have been enabled. However, if the same disclosure had been filed on January 2, 1996, it might have enabled the claims. Therefore, the state of the prior art must be evaluated for each application based on its filing date.

> **35 U.S.C. 112 requires the specification to be enabling only to a person "skilled in the art to which it pertains, or with which it is most nearly connected."** In general, the pertinent art should be defined in terms of the problem to be solved rather than in terms of the technology area, industry, trade, etc. for which the invention is used.

The Office Action fails to demonstrate that the specification does not provide such explanation. No portion of the MPEP or any patent authority requires the claims to incorporate the types of description referred to in the Office Action.

The above-noted MPEP section further states that:

> **The specification need not disclose what is well-known to those skilled in the art and preferably omits that which is well-known to those skilled and already available to the public**. *In re Buchner*, 929 F.2d 660, 661, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991); *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986), cert. denied, 480 U.S. 947 (1987); and *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1463, 221 USPQ 481, 489 (Fed. Cir. 1984).

An additional issue is that the words used in claims must be given their "plain meaning" unless they are defined in the specification. This is explained more fully with reference to MPEP §2111.01, entitled "Plain Meaning". This MPEP section states that:

> THE WORDS OF A CLAIM MUST BE GIVEN THEIR "PLAIN MEANING" UNLESS THEY ARE DEFINED IN THE SPECIFICATION
>
> While the meaning of claims of issued patents are interpreted in light of the specification, prosecution history, prior art and other claims, this is not the mode of claim interpretation to be applied during examination. During examination, the claims must be interpreted as broadly as their terms reasonably allow. This means that the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) (discussed

> below). One must bear in mind that, especially in nonchemical cases, the words in a claim are generally not limited in their meaning by what is shown or disclosed in the specification. It is only when the specification provides definitions for terms appearing in the claims that the specification can be used in interpreting claim language. *In re Vogel*, 422 F.2d 438, 441, 164 USPQ 619, 622 (CCPA 1970).

In the instant situation, both the dictionary definitions and the specification are in harmonious agreement. As such, the term "scalability" is definite, is appropriately employed and serves the interests that logically follow from the term "patent" as meaning obvious: the terminology serves to place the public on notice as to the nature and scope of the claimed subject matter.

The Office Action states (p. 5) that: "Claims 33-58 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter with applicant regards as the invention." The Office Action states (pages 5 and 6), that, with respect to claim 33: "Line 5 recites "a core converter to create one or more instances of the logical model." It is not understood how a core converter creates an instance or what is meant by an instance? The definition of "instance" provided by Webster's II New Riverside University Dictionary published 1n [sic] 1994 is as follows:

Instance n. 1. Something illustrative of a class or group 2. A legal proceeding or process 3. A step in a process."

Applicant has responded to the confusion evidenced in the Office Action regarding interpretation of the term "instance" above. The Office Action further states (page 6) that: "The claim must provide a clear explanation of what is meant by "instance" in the context of this invention. In addition, the use of the term "converted" is not understood. If [sic] for example, a model component is a term

in a mathematical equation, how may this be converted to the abstract term "instance? [sic]"

Appropriate correction and clarification are required."

Clarification and guidance as to interpretation of the term "instance", as employed in Applicants' claims, are provided hereinabove. Clarification and guidance as to interpretation of the term "convert", as used in Applicants' claims, are found using similar resources, such as the Summary and Detailed Description of the application as originally filed (e.g., see Figs. 7-10 and associated text).

The Office Action further states (page 6) that, with respect to claim 39, "It is not understood how a "service running state" is an element or component of a system."

This is discussed at least at page 23, line 24 through page 24, line 23 of the application as originally filed, stating that:

> The core converter 704 implements the policy decisions made by the management policy 702. The runtime converter 704 has a service running state 710 that tracks all instances of the model components currently in existence. That is, the service running state 710 tracks the elements in the physical world with respect to the logical model. The service running state 710 maintains a copy of the logical model, such as online retailing model 400 of Fig. 4. The logical model is created by the modeling system described above with respect to Figs. 5 and 6. The current instances are maintained in the instance-tracking database 522. The records in instance-tracking database 522 include such information as identify of the instance, the name of the logical component from which it is derived, the node on which it is running, the network addresses representing the ports of the modules and module extensions, such as stores, type of software loaded on the node, various protocols supported by the instance, and so forth. The instance-tracking database 522 tracks not only module instances, but also port instance, wire instances, and can also track instances of extensions such as stores, event ports, and event wires.
>
> The instances are derived from the logical model. The management policy 702 articulates the number of instances of each model component used to implement the Internet Service at any

given time. For example, suppose the Internet Service requires one hundred computers to effectively implement a front end that handles site traffic at 99.9% efficiency with each computer running at 70% utilization. The management policy 702 might further specify that more computers should be added if some policy threshold is met (e.g., efficiency rating drops below some threshold or computer utilization rises above some threshold) or removed if another threshold is met.

The Office Action also states (page 6) that: "The phrase "maintain a logical model of a service application" is not understood. Assuming that a model of a function has been developed for some application, and that it is stored in some medium, an explanation is needed to describe what maintaining the model entails."

The Office Action further states that "Line 6 recites "a resource manager to allocate nodes for the instances." There is no antecedent basis for "instances". It is not understood what is meant by an instance? ...." Claim 39 has been amended in response to the concerns noted in the Office Action with respect to antecedent basis.

Applicant finds such explanation at least at page 24, line 24 through page 25, line 17 of the application as originally filed. This passage is reproduced below:

> A resource manager 716 tracks all of the physical resources available to the Internet Service. These resources include computer nodes, storage, software, and so forth. Records identifying all of the resources are kept in the resource database 718. For instance, there might be one record for each computer node, storage device, and software module in the Internet data center. The records contain such information as the identity of the allocated nodes, computing characteristics and capabilities, the application(s) to which they are allocated, the date and time of allocation, and so forth.
>
> The resource manager 716 allocates the resources as needed or requested by the Internet Service according to the policy implemented by the policy manager 702. The allocation depends upon the availability of resources at the time of request. The resource manager 716 may also recover resources that are no longer

needed by the Internet Service and return the resources to the pool of available resources.

Upon allocation (or recovery) of a resource, the resource manager 716 posts a record to the resource database 718 reflecting which resource is allocated to (or recovered from) which Internet Service. As an example, when an Internet Service desires more nodes for the front end tasks, the resource manager 716 allocates one or more free nodes from the pool of resources to the Internet service.

The Office Action further states (p. 7) that, with respect to claim 50, "The phrase "maintain a logical model of an application" is not understood. Assuming that a model of a function has been developed for some application, and that it is stored in some medium, an explanation is needed to describe what maintaining the model entails." Such explanation is provided in the Detailed Description, particularly with reference to Figs. 7-10 and excerpts provided hereinabove.

Other comments regarding Applicants' claims and issues listed under 35 U.S.C. §112, 2ND ¶ are discussed hereinabove. Accordingly, the claims employ clear and definite language to recite the claimed subject matter. The Detailed Description provides additional description of the subject matter in full conformance with all applicable and relevant authority. The claims thus meet all requirements of Title 35, United States Code, §112, 2ND ¶. As such, Applicant respectfully requests that the rejection of claims 1-58 under 35 U.S.C. §112, 2ND ¶, be withdrawn, and that claims 1-58 be allowed.

Rejection under 35 U.S.C. §102:

Claims 1-58 stand rejected under 35 U.S.C. 35 U.S.C. §102(b) over Liu, U.S. Patent No. 5,031,089 (hereinafter "Liu"). Applicant respectfully submits that claims 1-58 are not anticipated by Liu and respectfully requests reconsideration and allowance of the subject claims.

Anticipation is a legal term of art. Applicant notes that in order to provide a valid finding of anticipation, several conditions must be met: (i) the reference must include every element of the claim within the four corners of the reference (see MPEP §2121); (ii) the elements must be set forth as they are recited in the claim (see MPEP §2131); (iii) the teachings of the reference cannot be modified (see MPEP §706.02, stating that "No question of obviousness is present" in conjunction with anticipation); and (iv) the reference must enable the invention as recited in the claim (see MPEP §2121.01). Additionally, (v) these conditions must be simultaneously satisfied.

The §102 rejection of claims 1-58 is believed to be in error. Specifically, the PTO and Federal Circuit provide that §102 anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference. *In re Spada*, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Cir. 1990). The corollary of this rule is that the absence from a cited §102 reference of any claimed element negates the anticipation. *Kloster Speedsteel AB, et al. v. Crucible, Inc., et al.*, 793 F.2d 1565, 230 USPQ 81 (Fed. Cir. 1986).

No §103 rejection has been lodged regarding claims 1-58. Accordingly, if Applicant can demonstrate that Liu does not disclose any one claimed element with respect to claims 1-58, the §102 rejections must be withdrawn, and a

subsequent non-final action made with a different rejection in the event that the Examiner still finds any of such claims to be not allowable.

Applicant notes the requirements of MPEP §2131, which states that "TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY ELEMENT OF THE CLAIM." This MPEP section further states that "'A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.' *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). 'The identical invention must be shown in as complete detail as is contained in the ... claim.' *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an ipsissimis verbis test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990)."

Liu is directed (Title) to a "Dynamic resource allocation scheme for distributed heterogeneous computer systems". Liu is directed to consideration of computer systems, stating that (Abstract): "In a distributed heterogeneous computer system having a plurality of computer nodes each operatively connected through a network interface to a network to provide for communications and transfers of data between the nodes and wherein the nodes each have a queue for containing jobs to be performed, an improvement for dynamically reallocating the system's resources for optimized job performance. There is first logic at each node for dynamically and periodically calculating and saving a workload value as a function of the number of jobs on the node's queue. Second logic is provided at

each node for transfering the node's workload value to other nodes on the network at the request of the other nodes. Finally, there is third logic at each node operable at the completion of each job. The third logic includes, logic for checking the node's own workload value, logic for polling all the other nodes for their workload value if the checking node's workload value is below a preestablished value indicating the node as being underutilized and available to do more jobs, logic for checking the workload values of the other nodes as received, and logic for transfering a job from the queue of the other of the nodes having the highest workload value over a preestablished value indicating the other of the nodes as being overburdened and requiring job relief to the que [sic] of the checking node. The third logic is also operable periodically when the node is idle."

In contrast, claim 1 recites "A method comprising: forming a scale-independent logical model of an application to be implemented by a distributed computer system, the model having multiple components representing logical functions of the application; and converting individual model components into one or more instances representative of physical resources that are used to implement the logical functions", which is not taught or disclosed by Liu.

The Office Action cites (page 9, item 7) col. 7, lines 13-41 of Liu with respect to claim 1. That passage is reproduced below:

> The foregoing objects have been achieved in a distributed heterogeneous computer system having a plurality of computer nodes each operatively connected through a network interface to a network to provide for communications and transfers of data between the nodes and wherein the nodes each have a queue for containing jobs to be performed, by the improvement of the present invention for dynamically reallocating the system's resources for optimized job performance. There is first logic at each node for dynamically and periodically calculating and saving a workload value as a function of the number of jobs on the node's queue.

> Second logic is provided at each node for transfering [sic] the node's workload value to other nodes on the network at the request of the other nodes. Finally, there is third logic at each node operable at the completion of each job. The third logic includes, logic for checking the node's own workload value, logic for polling all the other nodes for their workload value if the checking node's workload value is below a pre-established value indicating the node as being underutilized and available to do more jobs, logic for checking the workload values of the other nodes as received, and logic for transfering [sic] a job from the queue of the other of the nodes having the highest workload value over a pre-established value indicating the other of the nodes as being overburdened and requiring job relief to the queue of the checking node. The third logic is also operable periodically when the node is idle.

There is no teaching or disclosure in this passage of "forming a scale-independent logical model of an application", as affirmatively recited in claim 1. In fact, Liu is void of the term "scale" and as such cannot possibly teach the subject matter relating to any scale-independent model, as recited in claim 1. Further, there is no teaching or disclosure in this passage whereby such an application is "to be implemented by a distributed computer system" with "the model having multiple components representing logical functions of the application", as affirmatively recited in claim 1. Liu is void of the term "logical function".

Additionally, there is no teaching or disclosure in this passage of "converting individual model components into one or more instances representative of physical resources that are used to implement the logical functions", as also affirmatively recited in claim 1. Further, the Office Action makes no effort whatsoever to relate the affirmatively-recited elements of any of Applicants' independent claims to the passage cited in rejecting all of Applicants' claims. Clarification of the rejection is requested.

Also in contrast to Liu, claim 9 recites "A method comprising: constructing an application for a distributed computer system according to a logical model, the logical model having multiple components representing logical functions of the application; monitoring operation of the application during runtime; and automatically deploying resources of the distributed computer system to the application as operation conditions change", which is not taught or disclosed by Liu. Liu is silent with respect to such subject matter. In fact, Liu is void of the term "deploy" and is not concerned with deployment of resources of a distributed computing system or of automatically deploying such resources as operations conditions change.

Further in contrast to Liu, claim 18 recites "A method comprising: maintaining a logical model of an application for a distributed computer system, the logical model having multiple components representing logical functions of the application; creating one or more instances of each component in the logical model; and allocating resources of the distributed computer system to implement each of the instances", which is not taught or disclosed by Liu.

Liu describes resource reallocation responsive to workload monitoring and does not describe "creating one or more instances of each component in the logical model" as recited in claim 18. Liu also does not teach or disclose "allocating resources of the distributed computer system to implement each of the instances", as recited in claim 18. No attempt is provided in the Office Action to show where any such teaching or disclosure might be found. Clarification of the rejection, and establishment of any correspondence between the claimed subject matter and specific passage within Liu, are respectfully requested.

Moreover, claim 25 recites "A method comprising: maintaining a logical model of an Internet service hosted on a plurality of interconnected computer nodes, the logical model having modules representing logical functions of the Internet service; creating one or more instances of each module in the logical model; allocating a computer node for each corresponding instance; and configuring each computer node to perform the logical functions represented by the module from which the corresponding instance is created", which is not taught or disclosed by Liu.

As noted above, Liu is silent with respect to "creating one or more instances of each module in the logical model", as recited in claim 25. As such, Liu cannot possibly teach or disclose "allocating a computer node for each corresponding instance" or "configuring each computer node to perform the logical functions represented by the module from which the corresponding instance is created", as recited in claim 25.

As well, claim 33 recites "A system to deploy an application for a distributed computer system having a plurality of computer nodes, the system comprising: a logical model of the application, the logical model having multiple components representing logical functions of the application; and a core converter to create one or more instances of the model components and allocate computer nodes of the distributed computer system for the instances to implement the logical functions represented by the model components from which the instances are created", which is not taught or disclosed by Liu.

Liu fails to provide any description whatsoever of "a core converter to create one or more instances of the model components and allocate computer

nodes of the distributed computer system for the instances to implement the logical functions represented by the model components from which the instances are created", as recited in claim 33. The Office Action is similarly silent with respect to how one might attempt to apply the disclosure of Liu to the subject matter of claim 33.

Additionally, claim 39, as amended, recites "A model conversion system comprising: a service running state to maintain a logical model of a service application to be implemented by software as instances derived from the logical model and distributed across a plurality of computer nodes, the logical model having multiple components representing logical functions of the application; a resource manager to allocate computer nodes for the instances; and a loader to load various software onto the computer nodes allocated by the resource manager, the software being executable on the computer nodes to implement the logical functions represented by the model components from which the instances are derived", which is not taught or disclosed by Liu.

Liu is silent with respect to the subject matter recited in claim 39. For example, there is no teaching or disclosure in Liu of any "loader to load various software onto the computer nodes allocated by the resource manager", as recited in claim 39.

Again in contrast to Liu, claim 45 recites "A system comprising: means for maintaining a scale-independent logical model of a service application to be implemented by software distributed across a plurality of computer nodes, the logical model having multiple components representing logical functions of the application; means for creating one or more instances of the model components

according to a desired scale of the service application; and means for allocating the computer nodes to associated instances of the model components, the computer nodes being configured to perform the logical functions represented by the components from which the instances are created", which is not taught or disclosed by Liu.

For example, Liu is silent with respect to "means for creating one or more instances of the model components according to a desired scale of the service application; and means for allocating the computer nodes to associated instances of the model components", as recited in claim 45.

Furthermore, claim 50 recites "One or more computer-readable media comprising computer-executable instructions that, when executed on one or more processors, direct one or more computing devices to: maintain a logical model of an application to be implemented by software distributed across a plurality of computer nodes, the logical model having multiple components representing logical functions of the application; and convert the model components into one or more instances representative of physical resources used to implement the logical functions", while claim 53 recites "A computer-readable storage medium storing a data structure, the data structure comprising: a logical model of an application for a distributed computer system, the logical model having at least one module that represents a functional behavior of the application, at least one port that represents a communication access point for the module, and at least one wire that represents a logical connection between the port of the module and a port of another module; a first structure to store module information pertaining to one or more module instances of the module that correspond to physical resources used to implement

the functional behavior represented by the module; a second structure to store port information pertaining to one or more port instances of the port; and a third structure to store wire information pertaining to one or more wire instances of the wire", which recitations are not taught or disclosed by Liu.

For example, Liu provides no disclosure whatsoever of "convert the model components into one or more instances representative of physical resources used to implement the logical functions", as recited in claim 50. Furthermore, Liu is silent with respect to any "first structure to store module information pertaining to one or more module instances of the module that correspond to physical resources used to implement the functional behavior represented by the module", any "second structure to store port information pertaining to one or more port instances of the port" or any "third structure to store wire information pertaining to one or more wire instances of the wire", as recited in claim 53.

With respect to all of Applicants' claims, clarification of the rejection, and establishment of any correspondence between the claimed subject matter and specific passage within Liu, are respectfully requested.

Liu fails to provide the elements recited in any of Applicants' claims and thus cannot possibly set forth those elements as they are recited in the claims. The teachings of Liu thus require modification, impermissible in finding anticipation, in order to attempt to arrive at such subject matter. As such, Liu cannot possibly enable Applicants' claimed subject matter. Accordingly, the anticipation rejection fails to meet any of the conditions set forth in the MPEP for a finding of anticipation.

Dependent claims 2-8, 10-17, 19-24, 26-32, 34-38, 40-44, 46-49, 51, 52 and 54-58 distinguish by virtue of dependence from base claims believed to be allowable as well as for their own recited features that are not shown or disclosed by the cited references. For at least these reasons, Applicant respectfully requests that the §102 rejection be withdrawn, and that Applicant's claims 1-58 be allowed.

Conclusion

Claims 1-64 are in condition for allowance. Applicant respectfully requests reconsideration and issuance of the subject application. Should any matter in this case remain unresolved, the undersigned attorney respectfully requests a telephone conference with the Examiner to resolve any such outstanding matter.

Respectfully Submitted,

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By: _____

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